sound of their voices. They guided him regularly to a spring near by where I saw him bathe daily, always, however, with some of his companions close by. They not only watched and guided him but they fed him. I had noticed some days previously some Jays carrying food, and thought it strange at that season, as there were no young then to feed, but found afterwards, to my surprise and pleasure, that the poor old blind bird was being fed by those whom he could no longer see.

About a week after first noticing this bird I was compelled on account of sickness in the family to relinquish my observations. There is no doubt whatever that the bird was an old one. The young of the year are easily recognized, not alone by their plumage but by their peculiar teasing, whining notes, unmistakable to anyone familiar with the species.—FRITHOF KUMLIEN, *Milwaukee, Wis.*

[My attention has just been called by my friend Prof. G. W. Peckham to some notes in Darwin's 'Descent of Man,' 1875, pp. 102, 103. The existence of these observations was entirely unknown to my brother (the writer of the above, now recently deceased) or to me at the time his notes were made. I quote from Darwin, p. 102: "Capt. Stansbury found on a salt lake in Utah an old and completely blind pelican, which was very fat, and must have been well fed for a long time by his companions."* Also foot-note on same page: "Capt. Stansbury also gives an interesting account of the manner in which a very young pelican, carried away by a strong stream, was guided and encouraged in its attempts to reach the shore by half a dozen birds." Darwin adds: "Mr. Blyth, as he informs me, saw Indian crows feeding two or three of their companions which were blind."—LUDWIG KUMLIEN, *Milwaukee, Wis.*]

Notes on the Nomenclature of the Muscles of Volation in Birds' Wings.—Mr. Allen's interesting paper† calls up some points regarding the names of the 18 muscles of the antebrachium and manus of the bird. It may be safely assumed that these represent the usual or normal musculation of the parts, though I should be far from presuming that no additional ones, or no different specializations of these, occur in the class Aves. They have been named from time to time, by different persons, upon no system whatever, like most other anatomical structures. It may not be easy to refer the highly specialized musculation of the wing in detail to any system based upon the state of the parts in *Homo sapiens*, but I am able to indicate some of the homologies concerned with the muscles of the human forearm and hand. These I will note, according to the system of neuromyology of Coues and Shute.‡ I take them up in the order in which they are presented by Mr. Allen.

1. 'Flexor carpi ulnaris.' A muscle which has "its origin at the internal condyle of the humerus, and its insertion on the ulna at the wrist" is

* See H. Stansbury, 'Exploration and Survey of the Valley of the Great Salt Lake of Utah, &c.' Phila., 1852, p. 193.—ED.

† See this number of The Auk. p. 418.

‡ N. Y. Medical Record, XXXII, 1887, pp 93-98, 122-126.

certainly not the one so named in human anatomy, which passes from the entocondyle to the carpal sesamoid (pisiform) and so on to the fifth metacarpal. But I think there has been a slip here, the muscle in question really going to the manus for insertion. If so, it is correctly named and identified as the *flexor (meta-)carpi ulnaris* (see 'Key,' fig. 89, no. 36), or simply *flexor ulnaris* of C. and S.

2. 'Musculus ulni-metacarpalis ventralis.'

3. 'Musculus ulni-metacarpalis dorsalis.'

These two muscles I cannot at present writing bring into satisfactory positions in my system. They both appear to belong to the *flexor* set; but as there is neither flexion nor extension in a bird's wrist-joint (motions of adduction and abduction being substituted), one cannot proceed too carefully in identifying the muscles by their action. I see nothing ulno-metacarpal in man to which to refer these muscles. They may turn out to belong to two different groups, despite their concurrent action, and I do not venture to rename them at present.

4. 'Extensor metacarpi radialis.' This appears to correspond to *both* the radial wrist-extensors of anthropotomy, the 'longior' and 'brevior,' and the supinator longus may also be in question here. It is the muscle called (in the 'Key,' fig. 89, no. 32), after Carus, *extensor metacarpi longus.*

5. 'Extensor metacarpi ulnaris.' No doubt the muscle so called in man, and that called *extensor metacarpi brevis* in the Carus figure, 'Key,' No. 33.

6, 7. 'Flexor digitorum sublimis' and 'profundus.' These correspond to the muscles of the same name in man, also called *flexor perforatus* and *perforans* respectively.

8. 'Extensor digitorum communis.' This is said, by a slip, to originate on the 'head' of the humerus, *condyle* being obviously meant. It is the muscle of the same name in man. It appears to be wrongly named in the Key, "34*a* flexor digitorum sublimis," after Carus.

9. 'Extensor pollicis longus.' This may or may not correspond to one, or to two, or to all three of the thumb-extensors of man. That depends, first, upon whether the so-called thumb of a bird's hand be the first or the second digit, and next, upon how many of the human muscles are represented in or by the single one of the bird. This thumb muscle I do not recognize in the figure in the 'Key.'

10. 'Extensor indicis longus.' The final determination of this muscle depends upon the same considerations that affect the recognition of No. 9. In the 'Key' figure, it appears to be that one called "34*b* flexor* digitorum profundus."

11. 'Musculus interosseus dorsalis.' This is one of the muscles called *dorsossei* by C. and S. As it appears to be the only metacarpal *dorsosseus*,

*As long ago as 1871 I had an idea that the 'flexors' and 'extensors' of the forearm required to be revised in name to bring them into correspondence with their apparent representatives in the leg, and I used frequently to exploit the notion. This accounts for the use of 'flexor' in the cases of numbers 8 and 10.

it may be conveniently and appropriately called by this shorter name, without prejudice to the question, which of the four human dorsossei it represents—apparently the *tertius* or *quartus*.

12. 'Abductor indicis.' A dorsosseus apparently *secundus* or *tertius*.

13, 14. 'Flexor' and 'adductor pollicis. Two small thumb muscles situated upon the back of the manus, of uncertain systematic position. One of them may be really a dorsosseus; but that depends, as before, upon to which digit of the pentadactyl hand the thumb of a bird's tridactyl hand corresponds. One of these muscles is displayed in my Carus figure, '34c flexor brevis pollicis.'

15. 'Musculus interosseus palmaris.' This muscle, which has been specially drawn upon in the controversy elsewhere alluded to,* is situate on the 'internal' (that is, the palmar) aspect of the manus; it is therefore one of the three *palmossei* of C. & S., but which one, remains to be decided.

16, 17. 'Extensor' and 'adductor pollicis brevis.' Two 'pollical' muscles, to which the same remarks apply as to Nos. 13 and 14. It would seem that a bird's thumb, aside from its 'long' muscle which comes from the forearm, is exclusively actuated by four 'short' muscles, which flex, extend, abduct, and adduct it. Such regular musculation should not be difficult to homologize, but we must first settle the status of the digit itself. If a bird's hand be no exception to the probably invariable rule in mammals, that, when digits are reduced in number from five, the reduction is from *each side* alternately, so that digits I and V are the missing ones in a tridigitate member, then obviously, the three digits of a bird are II, III and IV corresponding to our index, middle and ring fingers. But if, in a bird, two digits have gone from the ulnar side, then the bird's three digits are I, II, III, corresponding to our thumb, index and middle fingers. I think that very likely a careful dissection of the two main *nervous* trunks of the forearm would throw a light upon the question which perhaps the examination of the embryonic carpus and metacarpus has not hitherto afforded.

18. 'Flexor digiti tertii.' Apparently one of the hypothenar subgroup of C. and S., but possibly a palmosseus: its identification depends upon that of the digit in question.—Elliott Coues, *Washington, D. C.*

*This number of The Auk, p. 418.